

2 External Environment

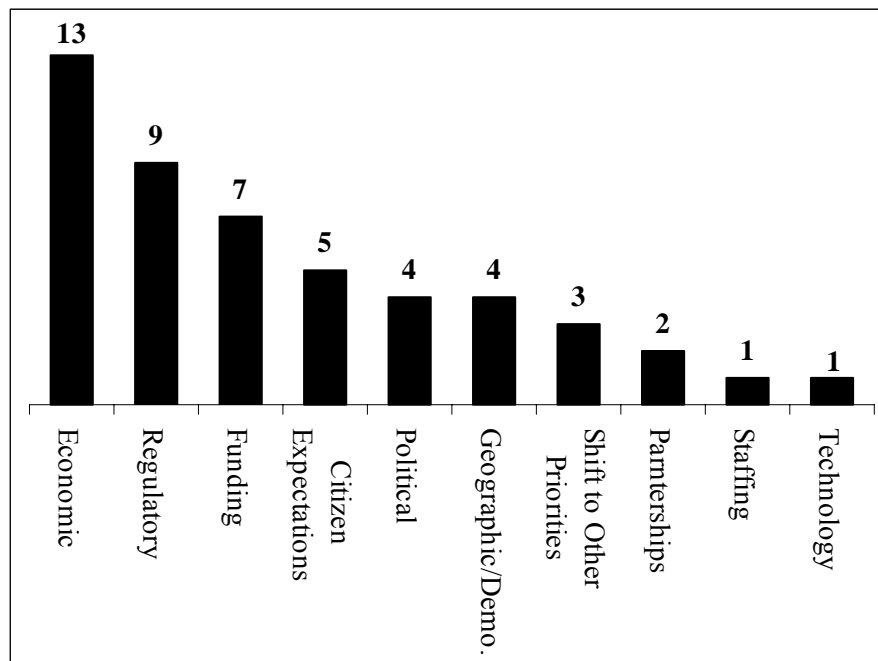
A scan of the external environment consists of identifying changing trends and patterns, monitoring specific trends and patterns, forecasting the future directions of these changes, and assessing the impact on the organization. Between February 11, 2003 and March 6, 2003, the consultant collected questionnaires from County staff and interviewed eight external stakeholders and asked what each group considered to be the major external factors affecting the STW's environment. The answers to this question provides the framework for this section. Table 2.1 is a summary of the external stakeholder answers ordered by number of times cited. Figure 2.1, by comparison, provides an overview of internal stakeholder response categories.

Overall, both external and internal stakeholders cited economic factors as having the greatest impact on the business area, primarily from the standpoint that in lean economic times stormwater will not compete well for resources against education, fire and rescue, police/security, health and human services, etc. Regulatory, funding, and demographic factors also figured prominently in the responses. The following sections provide additional detail regarding major external factors.

Table 2.1: External Factors Cited by External Stakeholders

Factor Area	Stakeholder Comments
Political/Economic	<ul style="list-style-type: none"> Political environment will dictate mission and ability to finance plans. The budget is the biggest external factor. The failure to consider a stormwater utility has been a tremendous blow to the stormwater program. The combination of economics and politics. Stormwater program needs money; the problem is how to use the political process to get this money. Reluctance to implement a utility fee.
Regulatory	<ul style="list-style-type: none"> Regulatory change from the State and federal levels. Current Chesapeake Bay Preservation Ordinance issues will have a substantial impact. Difficulty in enforcing erosion and sediment control measures. Getting a hold on the TMDL process before it takes on a life of its own. More TMDLs will need to be developed for benthic impairments. Chesapeake Bay Agreement and Tributary Strategies will result in nutrient and sediment load caps. The Bay Program at the federal level will take on a more regulatory flavor.
Demographics/Development	<ul style="list-style-type: none"> As redevelopment of lower density areas to higher densities occurs, there will be a greater potential for runoff to affect local streams. Demographically, if the County continues to grow, there will be more and more impervious surface cover to manage. The County is built-out. The PFM and other regulations are oriented toward large scale new development. The County is moving into an infill and redevelopment mode.
Other County Agencies	<ul style="list-style-type: none"> Needs to be a greater connection between Office of Site Development Services and STW.
Public Perception	<ul style="list-style-type: none"> Public perception is that all the STW does is study. STW is following the same path with its watershed planning process. All the money will be used up in the planning and there won't be anything left for effective implementation.

Figure 2.1: Summary of External Factors Cited by Internal Stakeholders



2.1 Economic Data

Virginia's Budget Crisis

Virginia's economic fortunes have suffered significantly since the late 1990s and early 2000s, which has been reflected in recent State budget cuts.

- General fund revenues at the State level fell from \$11,105.3 million in FY 2001 to \$10,678.9 million in FY 2002.
- Estimated FY 2003 general fund revenues are expected to increase only slightly to \$10,780.8 million.²
- FY 2003 funding for Natural Resources agencies was retroactively cut in the amount of \$24.6 million in October, 2003. Additional reductions to the FY 2003 budget were also made during the 2003 General Assembly. This affected the STW by eliminating/reducing the following resources:
 - Chesapeake Bay Local Assistance Department funding for the Northern Virginia Soil and Water Conservation District and for comprehensive planning assistance; and,
 - Virginia Water Quality Improvement Act funding to implement the Potomac Tributary Strategy.

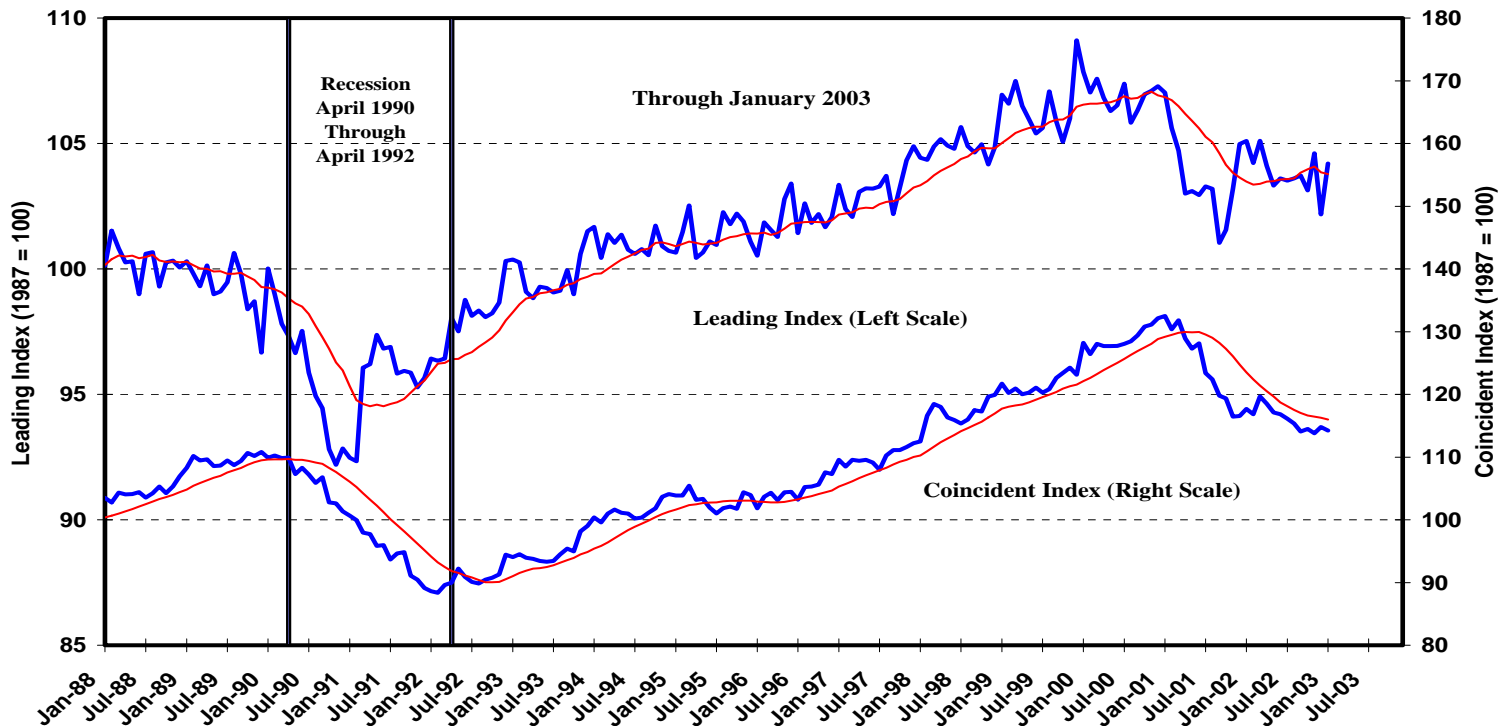
Fairfax County Economic Conditions

Fairfax County's economy has suffered a similar slow-down. According to the latest Fairfax County Coincident Index,³ which represents the current state of the County's economy, the economy continued to weaken and/or stay flat through January 2003.

² Virginia Department of the Treasury, January, 2003.

The Fairfax County Leading Index, designed to forecast the performance of the County's economy nine to 12 months in advance, increased in November. While this does not address the immediate fiscal crisis in Fairfax County, it may indicate a shift in long-term trends.

Figure 2.2: Fairfax County Economic Indicators (Through January, 2003)



Tight Labor Market

Despite a flat economy, the Fairfax County labor market remains tight. This affects the STW in terms of both retention and recruitment of qualified personnel.

- Northern Virginia has a 1.2 million person employment base.
- During 2002, the economy shed 13,000 jobs, or approximately 1.1%.
- The unemployment rate for the region remains at 2.5%, with Fairfax County at 2.3% in December 2002; the Virginia and national unemployment average is 3.6% and 5.7% respectively.
- Most job losses have come from the high-technology business services and telecommunications. Other sectors remain highly competitive.⁴

Limited Solutions to Raising Revenue

Because Virginia is a Dillon Rule state, meaning that local governments only have those powers expressly delegated to them through enabling legislation, potential solutions to stormwater funding are limited. Primary and secondary funding methods available to the County are presented in Table 2.2.

³ George Mason University Center for Regional Analysis, April 2003.

⁴ Virginia Employment Commission, January 2003.

Table 2.2: Primary and Secondary Stormwater Management Funding Sources in Virginia

Primary Funding Methods	Secondary Funding Methods
<ul style="list-style-type: none">• General Fund Appropriations• Stormwater Service Fees (Stormwater Utility)• General Obligation and Revenue Bonding	<ul style="list-style-type: none">• Special Assessments• Watershed Improvement Districts• Federal and State Funding/Grants• Pro-Rata Shares• In-Lieu-Of-Construction Fees• Other Service Fees

Fairfax County has a Pro-Rata Share Program and one Watershed Improvement District (Lake Barcroft). Planning for a Stormwater Utility stalled after a Stormwater Utility Advisory Group submitted a draft implementation report in 1998. Seven localities in Virginia have enacted Stormwater Utilities, with average annual revenue generating capacities between \$2.6 million and \$10.4 million. Annual revenue figures may be compared to the FY 2003 Revised Budget Plan for the STW of \$7,913,691.

2.2 External Regulatory Data

State and federal regulations, mandates, and initiatives will continue to have a significant impact on STW programs. Table 2.3 provides an overview of external regulatory factors. Of these factors, major areas of concern to the STW include:

- Virginia Pollutant Discharge Elimination System (VPDES) permit;
- Chesapeake Bay Preservation Area Designation and Management Regulations;
- Total Maximum Daily Loads (TMDLs);
- Dam Safety Regulations;
- Chesapeake Bay Program/Virginia Tributary Strategy initiatives; and,
- Government Accounting Standards Board Statement 34.

Virginia Pollutant Discharge Elimination System

Under the State Water Control Law, Fairfax County was required to obtain a Virginia Pollutant Discharge Elimination System (VPDES) permit from the Department of Environmental Quality to discharge stormwater through its municipal separate storm sewer system (MS4). Originally, issued to the County on January 24, 1997 (State Water Control Law Permit No. VA0088587), and re-issued on January 24, 2002, the permit requires the County to develop a Stormwater Management Program. Program elements are listed in Table 2.4.

Table 2.3: External State and Federal Regulations Affecting the Stormwater Management Business Area (STW)

- VPDES/NPDES Permits
- Chesapeake Bay Preservation Area Designation and Management Regulations
- TMDLs
- Dam Safety Regulations
- Chesapeake Bay Program/Virginia Tributary Strategies
- Government Accounting Standards Board Statement 34
- FEMA/Floodplain Requirements
- Wetlands Regulations
- Erosion and Sediment Control
- Americans With Disabilities Act
- Archaeological/Historical Regulations

Table 2.4: VPDES MS4 Permit Components

Permit Section	Component	Permit Section	Component
B.1	Implement Watershed Management Plans to maintain water quality and manage environmental resources.	B.1.h.	Implement a program to control pollutants in stormwater discharges to the MS4 from landfills; other treatment, storage, or disposal facilities; facilities that are subject to EPCRA Title III, Section 313 and other facilities.
B.1.a	Inspect and maintain public stormwater facilities and inspect private stormwater facilities.	B.1.i.	Implement a program to reduce the discharge of pollutants from construction sites.
B.1.b.	Enforce all components of the County's Comprehensive Land Use Plan.	B.1.j.	Implement a program to maintain and update the accuracy of the MS4 storm sewer infrastructure.
B.1.c.	Operate and maintain public roadways in a manner to minimize pollutants, including deicing.	B.1.k.	Implement a public education program.
B.1.d.	Implementing retrofitting existing SWM facilities in areas without controls.	B.1.l.	Conduct dry weather screening, wet weather screening, and industrial and high risk runoff monitoring.
B.1.e.	Develop and implement controls to reduce the discharge of pollutants related to the storage and application of pesticides, herbicides, and fertilizers applied to public rights-of-way, parks, and other municipal property.	C.1.	Develop long term watershed monitoring plans and trend analysis to verify the effectiveness and adequacy of control measures in the SWM plan.
B.1.f.	Prohibit non-stormwater discharges (illegal discharge and improper dumping) to the MS4.	C.2.	Conduct bioassessment monitoring.
B.1.g.	Implement a program to prevent, contain, and respond to spills that may discharge into the MS4.	C.3.	Conduct floatables monitoring.

The STW has already re-organized to respond to the requirements of VPDES and it is not expected that additional VPDES requirements will directly affect County operations in the near future (the current permit will not expire until 2007). However, several entities regulated under VPDES Phase II (effective March 10, 2003) should coordinate with the STW. According to DEQ Northern Virginia Regional Office staff, the following additional entities are regulated under Phase II:

- the cities of Fairfax and Falls Church and the towns of Clifton, Herndon, and Vienna;
- the Fairfax County Public Schools;
- public hospitals; and,
- public colleges and universities (George Mason University and the Northern Virginia Community College system).

Some of these entities may request to piggy-back on the County's VPDES permit, or to coordinate specific aspects of permit planning and compliance. Such requests, depending on the nature of the coordination, could have budgetary implications.

Chesapeake Bay Preservation Area Designation and Management Regulations

In November, 2001, the Chesapeake Bay Local Assistance Board (CBLAB) adopted amendments to the Chesapeake Bay Preservation Area Designation and Management Regulations. A significant change was to mandate that all “water bodies with perennial flow” be protected by an RPA buffer area. The change in definition will significantly increase the number of streams protected by RPA buffer areas. A work group consisting of representatives from several Fairfax County agencies has evaluated the issues concerning the mapping of perennial streams and has recommended a protocol to accomplish their identification.

The deadline for compliance with the amended regulations has been extended by CBLAB until December 31, 2003.

Total Maximum Daily Loads

The Total Maximum Daily Load (TMDL) requirements of the Clean Water Act represent a relatively new regulatory effort that will affect the way the STW plans and operates. In its basic form, a TMDL is a pollution budget established for streams that violate State water standards.

- A total of 17 waterbodies that drain areas of Fairfax County are included in the 2002 Virginia 303(d) TMDL Priority List.
- TMDLs have already been developed for a segment of Accotink Creek and the non-tidal portion of Four Mile Run.
- The major cause of impairment for the majority of riverine waterbodies is either fecal coliform or general standards (benthic degradation).
- For most estuarine waterbodies, the cause of impairment is PCBs in fish tissue. Many of the listed waterbodies include significant drainage areas outside of Fairfax County.
- Twelve of the 17 waterbodies were listed for the first time in 2002.
- According to the Virginia DEQ’s current schedule, TMDL studies will be completed for six waterbodies by 2010, with the rest to be completed by 2014.

Specific issues of concern to the STW include the following.

- The Occoquan Reservoir is listed as impaired for dissolved oxygen (DO). Virginia DEQ has proposed that the impairment is naturally occurring and therefore does not require the development of a TMDL. However, this will require an intensive study to demonstrate that the impairment is non-anthropogenic.
- Water quality standards for bacteria have changed to a new *E. coli* standard. Virginia DEQ will phase out the fecal coliform standard after 12 data points (or measurements) or by June 30, 2008. It is not known how this will affect the number of streams listed as impaired in Fairfax County.
- The current VPDES permit can be used by Virginia to enforce compliance with TMDL implementation requirements. This could result in fines for non-compliance or an inability to renew the permit in the future.
- Once TMDLs are developed, the State must, by law, develop and implement a TMDL Implementation Plan. If it is found that the Implementation Plan cannot be met, then the State must conduct a Use Attainability Analysis to revise water quality standards or change the designated use for the water body.

Dam Safety Standards

In July 2002, the Virginia Dam Safety Act (Virginia Dam Safety Act, Article 2, Chapter 6, Title 10.1 (10.1-604 *et seq*) was amended to reflect legislative changes made during the 2002 General Assembly. The key change in the Act came in the language defining “impounding structure,” to which the following language was added to replace older language “...(i) all dams that are 25 feet or greater in height and that create an impoundment capacity of fifteen acre feet or greater, and (ii) all dams that are six feet or greater in height and that create an impoundment capacity of fifty acre-feet or greater.”⁵ Thus for structures that are six feet in height (the vertical distance from the streambed at the downstream toe to the top of the dam) or higher and create an impoundment capacity of 50 acre-feet or more, the structure becomes a regulated dam under the Act. While the six foot threshold was designed to remove small levees and dams that are used in the creation of artificial wetlands and small agricultural dams from these regulatory requirements, the definition’s amendment may require certain existing stormwater management facilities, which under the superceded definition of an impounding structure did not require a DCR dam safety permit, to now be classified as regulated dams under the Act and be required to apply for and obtain a dam safety permit from DCR. As such, inspection requirements and engineering certifications to the Virginia Soil and Water Conservation Board are required to be executed by the dam owner.

As many potentially designated structures may be private stormwater impoundments, commercial property administrators and homeowners associations (HOAs) may soon need to consider the need to have their dams inspected and certified on an annual basis.

Chesapeake Bay Program/Virginia Tributary Strategies

The federal Chesapeake Bay Program and Virginia’s Tributary Strategies process will present significant new challenges to the STW. The multi-jurisdictional 2000 Chesapeake Bay Agreement commits Virginia to remove the Chesapeake Bay from the U.S. EPA’s list of impaired waters by the year 2010. Such an effort will require significant additional reductions in both nutrient and sediment loads to the Chesapeake Bay. While the 2000 Chesapeake Bay Agreement is non-regulatory, failure to meet its water quality commitments could result in the imposition of a TMDL, which is regulatory in nature, on the entire Chesapeake Bay watershed.

According to information from the Metropolitan Washington Council of Governments, nutrient and sediment load caps will be defined for each of the Bay’s nine major tributaries, including the Potomac, in April 2003. These will serve as the quantitative basis for a new Potomac Tributary Strategy, expected to be developed by April 2004. While the State has ultimate responsibility for developing the Tributary Strategy, most of the implementation measures will fall to local governments.

Government Accounting Standards Board – Statement 34

Government Accounting Standards Board (GASB) Statement 34 requires the County to report capital assets at historical cost or estimated historical cost. Capital assets include infrastructure, which are defined as long-lived capital assets that are stationary in nature. Examples include stormwater management facilities, public drainage systems, public trails and walkways, commercial revitalization programs, etc. To meet GASB requirements, the County engaged a contractor to develop a General Infrastructure, Library Collections, and Related Assets Report (June 2002). The purpose of the report was to “provide recommendations to assist the County in: (1) estimating the net book value of general infrastructure assets, library collections, and all other

⁵ Virginia Soil and Water Conservation Board Impoundment Structure Regulation.

related assets at June 30, 2002; and (2) prospectively recording, depreciating, and tracking these assets subsequent to June 30, 2001.”

FEMA/Floodplain Requirements

Fairfax County participates in the National Flood Insurance Program (NFIP). The NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Fairfax County has a total of 1,269 flood insurance policies in place that provide approximately \$268 million in flood insurance coverage with a total annual premium value of \$537,169.⁶

Fairfax County’s floodplain management regulations are promulgated through the County Zoning Ordinance and are implemented through the County’s Public Facilities Manual (PFM). The County’s program meets all the minimum requirements set forth in the Federal Code (44 CFR 60) and goes beyond the federal minimums in several areas, including the requirement to elevate the lowest part of the lowest floor of any proposed residential structure at least 18 inches above the 100-year water surface elevation and provide a minimum horizontal distance of 15 feet between the 100-year water surface and the structure proper.⁷

Because the County’s floodplain management program requirements exceed the federal minimum standards, the County is eligible for, and participates in, the NFIP Community Rating System (CRS), which rewards community flood insurance policy holders with premium discounts based on the community’s implementation of additional floodplain management activities. Community flood insurance policy holders can receive anywhere from a 5% to 45 % reduction in their policy premiums. The CRS scale runs from category 10, which receives no premium discount, to category 1, which receives a 45% premium discount. Over 75% of the communities that participate in CRS are either a category 8 (10% discount) or category 9 (5% discount). Fairfax County’s current CRS rating is 9.⁸

Wetlands Regulations

The Virginia Department of Environmental Quality is the primary State agency responsible for nontidal wetland regulation, while the Virginia Marine Resources Commission (VMRC) is the State agency responsible for issuing tidal wetland permits. The Virginia Water Protection Permit Program serves as Virginia’s certification process for both tidal and nontidal wetland impacts permitted under Section 404 of the Clean Water Act. In 2000, the General Assembly removed the dependence of the State nontidal wetlands program on the issuance of a federal permit, thus enabling Virginia DEQ to use the Virginia Water Protection Permit Program to regulate activities in wetlands. General Assembly action came largely in response to a Supreme Court ruling that threw into doubt the federal government’s ability to prohibit “Tulloch ditching.” Tulloch ditching involves creating a series of ditches to drain a wetland without actually filling the wetland. New State regulations prohibit this type of excavation.

⁶ Statistics as of 12/31/02 from the National Flood Insurance Program (NFIP).

⁷ 2001 Fairfax County Public Facilities Manual, § 6-0704.2, page 6-19.

⁸ CRS data as of October 1, 2002.

Erosion and Sediment Control

The Fairfax County Erosion and Sediment Control Ordinance (Chapter 104 of the County Code) requires actions to reduce sediment deposition from construction sites and requires adequate outfalls for stormwater discharges to protect downstream properties and waters from upstream impacts. The Virginia Department of Conservation and Recreation (DCR) implements the State ESC Program according to the Virginia Erosion and Sediment Control Regulations (4VAC30-50). The regulations specify "Minimum Standards," which include criteria, techniques and policies, that must be followed on all regulated activities.

Fairfax County has a Corrective Action Agreement with DCR for program elements found to be inconsistent with the State regulations during the local program review process. The last review of the County's program by DCR was completed in November 2002.

Americans With Disabilities Act

Title II of the federal Americans With Disabilities Act (ADA), enacted in 1990, requires State and local governments to make their programs and services accessible to persons with disabilities. For existing buildings and facilities, the ADA requires that all barriers to accessibility be removed when it is "readily achievable" to do so.⁹ An example of an ADA requirement affecting Fairfax County is when streets and roads are newly built or altered they must have ramps wherever there are curbs or other barriers to entry from a pedestrian walkway. Another example can be seen in how ramps are incorporated in to the design of Virginia Railway Express stations.

Archaeological/Historical Regulations

The National Historic Preservation Act (NHPA) establishes a comprehensive program to preserve sensitive historic structures and archaeological sites. Of particular relevance to the STW is Section 106 of the NHPA, which requires consideration of historic preservation during any activity that requires federal action or involves federal funding. This includes Army Corps of Engineers permits for actions that have the potential to impact Waters of the United States. Coordination at the State level is handled by the Virginia Department of Historic Resources.

While the federal agency involved and the Virginia Department of Historic Resources are responsible for coordinating the Section 106 review, the County must work with those agencies to ensure that proper documentation has been provided. If it is found that an activity has the potential to affect historic and/or archaeological resources, then the County may be required to mitigate the impacts, or to consider alternatives to the project.

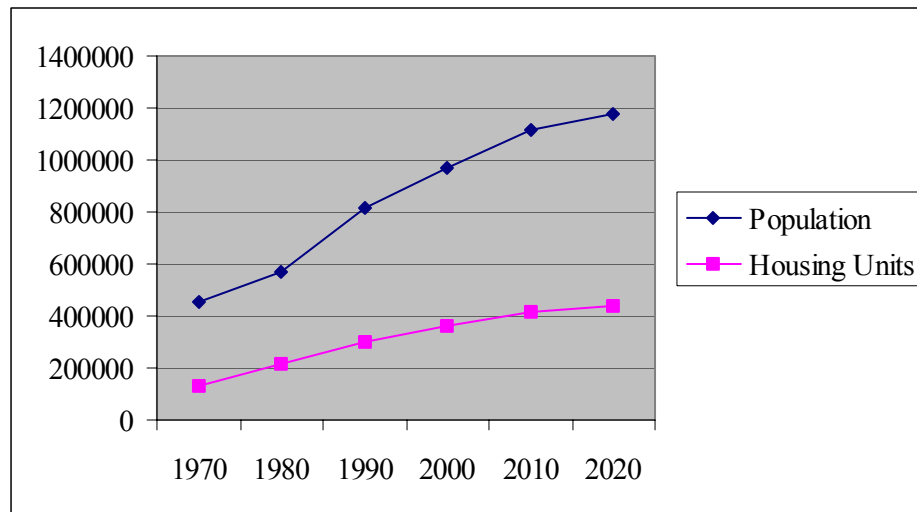
⁹ ADA and City Governments, U.S. Department of Justice, May 2000.

2.3 Demographic Data

The demographic profile of Fairfax County has changed dramatically in the past several decades, both in terms of growth and population characteristics. While Fairfax County's rate of growth is predicted to diminish over the next 10 to 20 years, the actual increase in residents is still considerable. Fairfax County grew by 18% between 1990 to 2000 from 818,600 residents to 968,200 residents. According to Metropolitan Washington Council of Governments (MWCOC) Round 6.2 forecasts, Fairfax County is expected to grow by an additional 144,700 residents between 2000 and 2010. This represents a slightly decreased rate of increase (15%); however, in terms of sheer numbers, it is still a larger actual increase than either Loudoun County or Prince William County (see Figure 2.3 and Table 2.5).

Much of the County's future growth in population will not come in the form of the development of virgin land, but will come as a result of redevelopment and densification of existing land use patterns (see Figure 2.4). As of January 2000, only 11.5% of the County's land area was considered vacant land. By contrast, almost 36% of the County's land was considered vacant in 1975. At the same time, impervious surface cover in the County is expected to continue to increase. A GIS analysis performed by the Stormwater Planning Division staff estimates that impervious surface cover will increase from a current 15.7% to 17.9% under hypothetical build-out conditions based on the existing Comprehensive Plan.¹⁰

Figure 2.3: Population and Housing Unit Trends in Fairfax County



¹⁰ The Role of Regional Ponds in Fairfax County's Watershed Management, March 2003.

Table 2.5: Comparative Growth Rates for the Washington Metropolitan Region¹¹

JURISDICTION	(Thousands)						
	1990	2000	2005	2010	2015	2020	2025
District of Columbia	606.9	518.1	523.5	554.7	588.0	618.6	648.4
Arlington County	170.9	192.0	198.2	201.4	207.2	212.9	218.1
City of Alexandria	<u>111.2</u>	<u>127.1</u>	<u>131.3</u>	<u>135.3</u>	<u>138.7</u>	<u>140.9</u>	<u>146.1</u>
Central Jurisdictions	889.0	837.2	853.0	891.4	933.9	972.4	1,012.6
Montgomery County (1)	757.0	855.0	910.0	945.0	975.0	1,000.0	1,020.0
Rockville (2)	44.8	51.8	55.8	59.1	59.8	60.0	60.0
Prince George's County	729.3	784.6	824.5	852.4	886.1	916.6	940.9
Fairfax County (3)	818.6	968.2	1,045.4	1,112.9	1,155.6	1,184.1	1,203.7
City of Fairfax	19.6	21.7	22.1	22.7	22.8	22.8	22.8
City of Falls Church	<u>9.6</u>	<u>10.4</u>	<u>10.6</u>	<u>10.7</u>	<u>10.8</u>	<u>10.9</u>	<u>10.9</u>
Inner Suburbs	2,334.1	2,639.9	2,812.7	2,943.7	3,050.4	3,134.4	3,198.3
Loudoun County	86.1	172.2	238.2	304.2	371.2	439.0	508.2
Prince William County	215.7	286.1	321.9	350.5	369.2	387.1	405.7
Manassas/Manassas Park	34.7	43.2	44.7	45.4	45.7	46.0	46.4
Calvert County (4)	51.4	75.0	80.8	87.0	91.4	96.0	100.5
Charles County (4)	101.2	123.2	136.7	150.1	166.5	182.9	195.9
Frederick County	150.2	194.9	216.6	238.3	260.0	281.7	303.4
Stafford County (5)	61.2	78.6	87.3	96.0	104.7	113.3	122.0
Anne Arundel County (6)	427.2	480.2	501.0	511.2	522.4	531.5	537.0
Howard County (6)	187.3	253.5	283.8	302.5	309.4	303.5	303.5
Outer Suburbs (6)	700.5	973.1	1,126.1	1,271.5	1,408.7	1,546.0	1,682.1
Northern Virginia	1,527.6	1,899.5	2,099.7	2,279.1	2,425.9	2,557.0	2,683.9
Suburban Maryland (6)	1,789.0	2,032.7	2,168.5	2,272.8	2,379.0	2,477.2	2,560.7
REGIONAL TOTAL (6)	3,923.6	4,450.3	4,791.7	5,106.6	5,392.9	5,652.8	5,893.0

(3) Includes Fairfax County group quarters population in the Massey Complex.

According to 2000 U.S. Census data, Fairfax County's citizenry is also becoming racially and ethnically diverse.

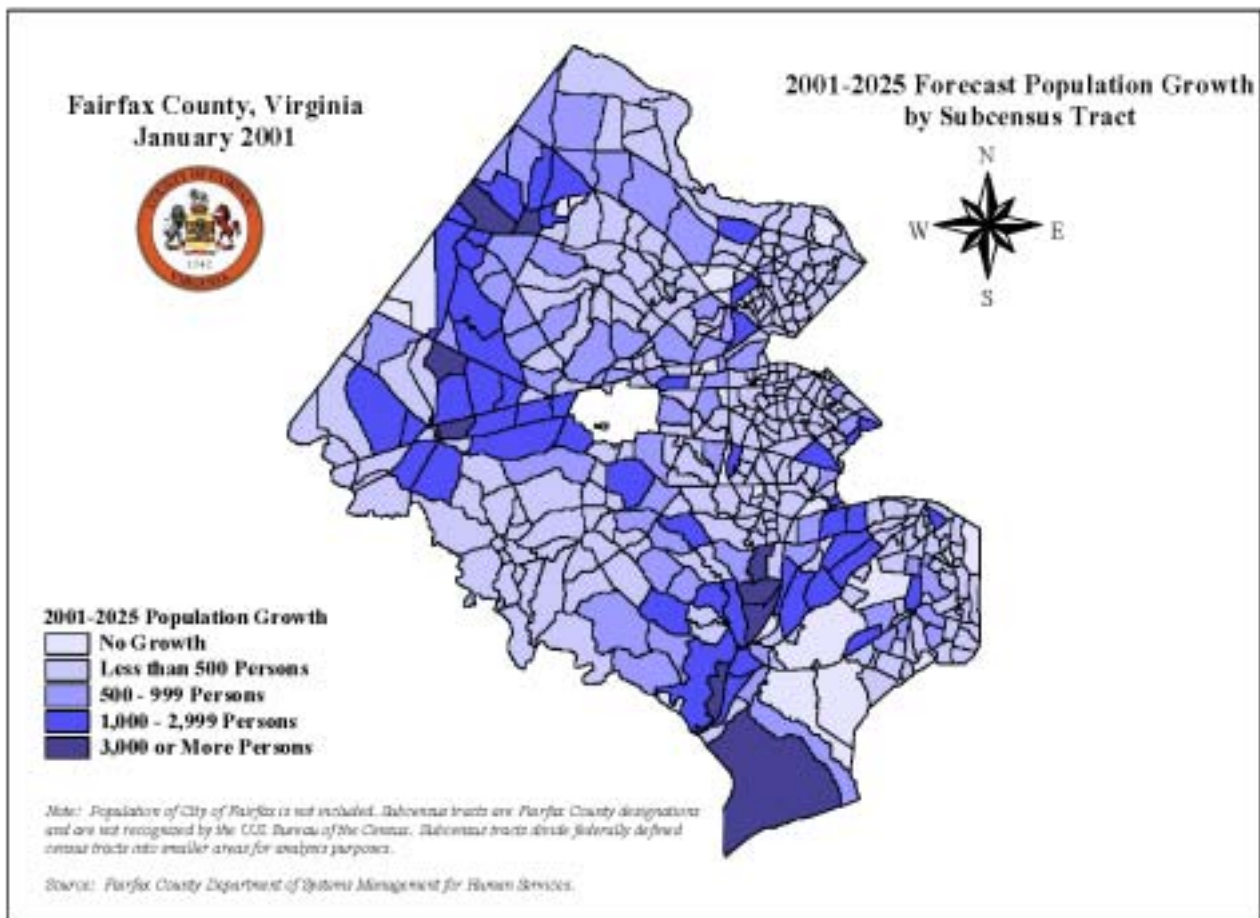
- In 1980, 86.2% of the County's population consisted of White/Non-Hispanics.
- In 2000, White/Non-Hispanics comprised only 63.6% of the population.
- While the Black population rose slightly, major increases were seen in the Hispanic (3.3% to 11.6%) and Asian (3.8% to 14%) populations.
- A major outgrowth of this trend that affects almost all Fairfax County business areas is an increase in the percentage of the population that "speaks English less than very well."
- Over 13% of County residents speak English less than very well.
- A little less than half of those speaking English less than very well speak Spanish as a primary language.
- Asian and Pacific speaking residents comprise about one-third of those speaking English less than very well.

¹¹ Metropolitan Washington Council of Governments Round 6.2 Forecast.

- Fairfax County, by far, has the largest concentration of residents that speak English less than very well in Virginia (119,065 residents over 5 years of age, compared to Arlington County, with only 29,793 residents over 5 years of age).
- A significant ramification of this trend is that at least 13% of County residents will not understand outreach and educational materials produced in English-only.

Finally, Fairfax County has an aging population that could affect the business area by generating additional demand for sidewalks and trails. According to information from the Fairfax County Department of Human Services and the U.S. Census Bureau, the elderly population (65+) in the County is expected to increase from 8.2% of the total population in 2001 to 12.9% in 2010.

Figure 2.4: Expected Growth Areas in Fairfax County by Subcensus Tract



2.4 Infrastructure Data

An increasing infrastructure base over time erodes available staff resources to adequately deal with necessary upkeep and maintenance. Since 1980, the County has added over 400,000 residents, 45 million square feet of office space, and over 165,000 housing units. During this process, STW became responsible for additional stormwater management facilities, walkways, roadways, commercial revitalization and park and ride facilities, public street name signs, and other related infrastructure inventory.

In June 2002, Fairfax County performed a valuation of general infrastructure assets to meet GASB Statement 34 requirements. Table 2.6 provides an overview of business area infrastructure as of December 31, 2002, including stormwater management ponds, public trails and walkways, public drainage systems, and MSMD funded contract facilities. In addition to these publicly-owned facilities, there is estimated to be over 1,900 privately maintained facilities for which the County has some oversight responsibility, primarily in the form of inspections to ensure that maintenance is being carried out.

Table 2.6: STW Maintained County Infrastructure (December 31, 2002)

Stormwater Management	Facilities
• State Ponds	6 facilities
• Regional Ponds	35 facilities
• Small Ponds	969 facilities
Public Trails and Walkways	Miles
• Trails (asphalt)	197.0 miles
• Public Street Sidewalk (concrete)	310.9 miles
• School Walkway (concrete)	47.6 miles
MSMD Funded Contract	Facilities
• Bus Shelters	23 facilities
• Park and Rides	6 facilities
• Commuter Rails	4 facilities
• Bus Transits	1 facilities
Public Drainage System	Miles/Structures
• Pipes	743.0 miles
• Structures	37,116 structures
• Improved Channels	75.2 miles
• Swales, Ditches, Streams	4.6 miles

Since the County's stormwater management program began in the late 1970s and rapidly accelerated in the mid-1980s, the STW is faced with how to maintain and/or replace aging structures. The life-span of a small pond, for instance, can range from 20 to 50 years depending on the facility and the level of preventative maintenance performed. Slightly more than 300 of the County's 969 small ponds were build prior to 1985 and are therefore approaching the 20 year mark.

2.5 Environmental Data

The health of the County's natural resources is a major external factor that will affect the STW in terms of planning and budgeting in the future. The County has over 900 miles of stream and 30 separate subwatersheds.

Environmental data in the County is gathered through the Department of Health's Division of Environmental Health, the DPWES Stream Protection Strategy Program, and the Northern Virginia Soil and Water Conservation District's Volunteer Stream Monitoring Program. The Health Department has conducted a stream water quality program since 1969. Currently, 85 sites within 25 of the County's 30 watersheds are sampled twice a month. In its most recent

assessment, the Department of Health has concluded that the overall health of the County's streams is:

- Good for chemical and physical parameters; and,
- Fair for fecal coliform bacteria.

Table 2.7: Department of Health Water Quality Summary¹²

Parameter	Conclusion
Dissolved Oxygen	99% of samples above the minimum 4.0 mg/l range.
Nitrite Nitrogen	Overall geometric mean of 0.6 mg/l. No samples above the maximum level of 10 mg/l.
Total Phosphorus	Overall geometric mean of 0.10 mg/l does not indicate significant increase over prior year average.
Temperature	Average low of 32 F and average high of 84 F. Maximum standard for free-flowing stream is 89.9 F.
Heavy Metals and Toxins	All results within required limits.
pH	Ranged from 5.2 to 9.3. Range of 6.0 to 9.0 is considered adequate protection. Fifteen samples above 9.0, and six samples below 6.0.
Fecal Coliform	Average geometric mean for fecal coliform at several sites approaches or surpasses 1,000 f.c./100 ml limit.

While the Health Department's program focuses on water quality testing, the County launched a Stream Protection Strategy (SPS) program in 1998 to assess the physical stability and ecological integrity of major streams and tributaries within the 30 watersheds in the County. The results from the original baseline assessment completed in 2000 were used to identify, rank, and prioritize County streams. The SPS Baseline Study was published in January 2001 and is available on the County's website.

Figures 2.5 shows the percentage of SPS monitoring sites that ranked very poor, poor, fair, good, or excellent according to an Index of Biological Integrity (IBI). Figure 2.6 shows the correlation between impervious surface cover and stream degradation. As impervious surface cover increases, ecological activity tends to decrease rapidly. Generally, impervious surface cover from 10 to 20% has the potential to significantly impact stream biology, while cover greater than 20% tends to result in a severely degraded ecology. Figure 2.7 shows that fully 53% of the County has impervious surface cover greater than 20%.

¹² Taken from 2002 Annual Report on the Environment, EQAC.

Figure 2.5: Percentage of SPS Monitoring Sites Scoring in Each of the Five IBI (Index of Biological Integrity) Quality Categories

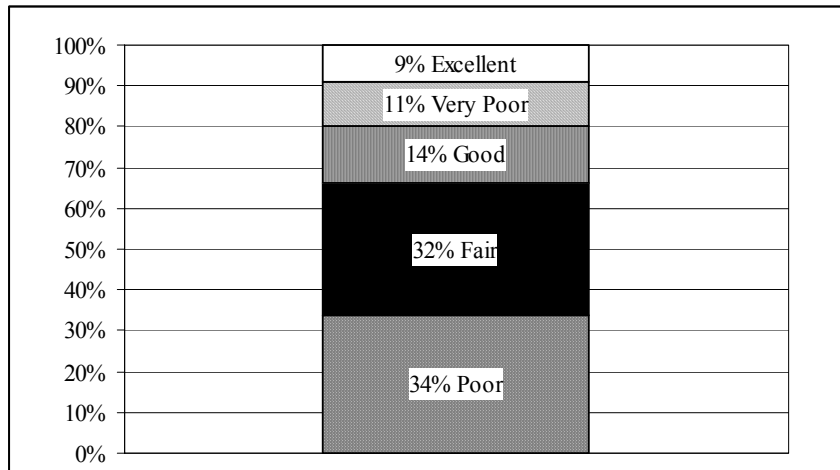


Figure 2.6: Percent Imperviousness Versus IBI in Fairfax County

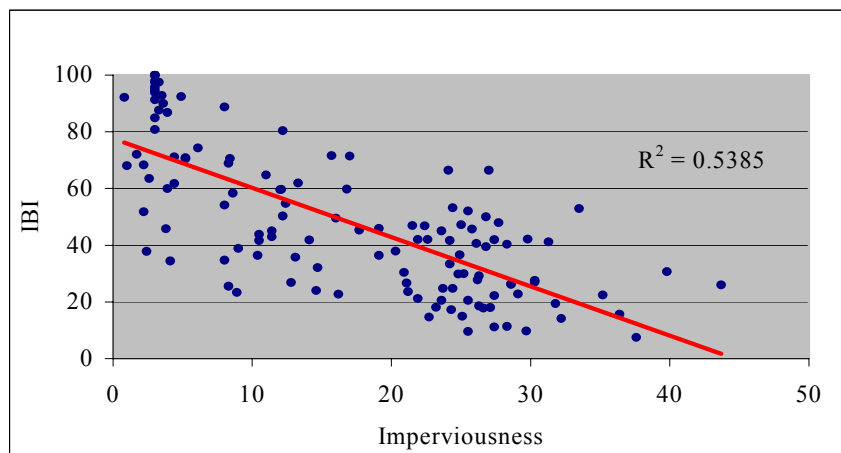
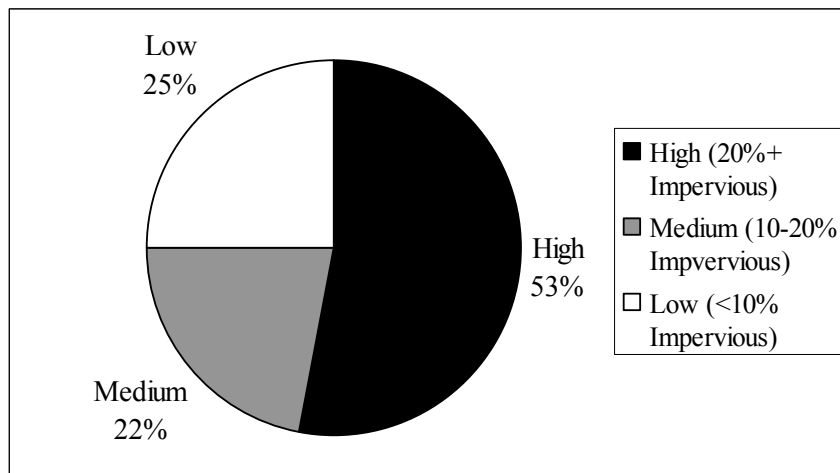


Figure 2.7: Percentage Impervious Surface Cover in Fairfax County



2.6 Public Perception and Citizen Expectations

Public perception about stormwater and whether it is a problem or not figures prominently in the ability of the STW to secure additional resources. One external strength noted during the SWOT process is that Fairfax residents, in general, have a healthy awareness of environmental issues. While there is no Fairfax County-specific data on public perceptions about stormwater, the U.S. EPA's Chesapeake Bay Program has conducted an assessment of knowledge, attitudes, and behaviors towards water quality issues.¹³ Key findings pertaining to the STW include the following.

- 48% of respondents correctly identified the definition of “watershed.” The ability to define a watershed increases with income. White respondents scored higher (65% correct) than Black respondents (36% correct).
- The highest overall knowledge scores were obtained in North-central Virginia (54% correct).
- 89% of respondents are either Very or Somewhat Concerned about pollution in the Chesapeake Bay.
- 42% of respondents believe that their local streams and waterways are More Polluted than 10 years ago. 20% believe that they are Less Polluted.
- Personal observation was the most important factor affecting respondents' views on pollution (31%). Other factors included Environmental Group Reports (21%) and Media Reports (20%).
- Residents in North-central Virginia indicated that Population Growth is the greatest source of pollution.
- 53% of respondents agreed that their everyday actions adversely affect water quality.

¹³ Chesapeake Bay Watershed Resident Survey, Conservation Management Institute, prepared for the Chesapeake Bay Program, August 21, 2002.

- 94% of respondents believe that restoring waterways in the Bay region is Important compared to other social, economic, and environmental problems.
- 49% of respondents believe that current restoration efforts are Too Little. 2% believe that they are Too Much.
- Catalysts for action include: saving money in the long run (37%); being directly affected by pollution (57%); ability to really make a difference (43%); and minimal time commitment (37%).

Closely related to public perception is citizen expectation. As opposed to public perception, information regarding expectations is largely anecdotal. In general, citizens expect the stormwater management infrastructure to work and that the County will take care of problems before they cause inconvenience or damage to private property. As with most public infrastructure (including waste management and water pollution control facilities), there is an expectation of “out-of-sight, out-of-mind,” making it difficult to plan for large capital improvements such as regional ponds. Finally, based on Board of Supervisors actions to-date regarding alternative funding strategies, citizens expect the stormwater infrastructure to be paid for out of the General Fund.

2.7 Unplanned External Factors

Unplanned, or short-term external factors were cited as both opportunity and a threat during the SWOT process. These factors are a threat in that they can siphon funding and resources from important ongoing programs and divert attention from long-range planning. This is especially true if the factor is outside of the STW business line. These factors are an opportunity in that they can sometimes be used to provide momentum to solve related problems or to increase overall funding for programs. Examples include:

- West Nile Virus impact on STW by focusing attention on the need for maintenance and souring public opinion on BMPs that utilize standing water.
- Public health issues, such as whether the County has a responsibility to alert citizens about stream segments that are impaired for fecal coliform bacteria, etc.
- Accidents or injuries involving STW-related infrastructure, such as stormwater ponds, trails, walkways, etc.
- Major weather-related events, such as this past winter’s snow storm, last summer’s drought, and major flooding events.